EPA Region 7 TMDL Review

TMDL ID	303	*Water Body ID*	Saline River (4, 8, 9, 11, 12, 14, 16)
Water Body Name	Wilson Lake Watershed		
Pollutant	Selenium		
Tributary	WQLS: Paradise Creek 5, 7		
State	KS *HUC*	10260009	
Basin	Smoky Hill/Saline		
Submittal Date	07/09/2004		
Approved	approved		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/ water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

A letter was received by EPA on July 9, 2004, formally submitting this TMDL document for approval under Section 303(d).

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

The levels of selenium in the surrounding basin of the lake have been consistently above the water quality standard for protection of chronic aquatic life, set at 5 ug/L, since at least 1993. The loading capacity in these phased TMDLs is based on the numeric criterion of 5 ug/L selenium for the three monitoring stations in the sub-basin.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

The water quality standards, beneficial uses and numeric criteria are described. The target is the numeric criterion for selenium, 5 ug/L.

Link Between Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

The target is the numeric criterion and the link between the target and the selenium is direct.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

The main natural source of the sulfate is due to the weathering of upper Cretaceous bedrock that underlies the drainage basin. Irrigation wells and other sources of diversion have resulted in a decline in streamflow in the watershed thereby also restricting additional water that would otherwise dilute the more mineralized water in the rivers and lake downstream. Irrigation return flows have likely increased the concentration of selenium from natural sources and phraetophytes in the riparian corridor have also increased the dissolved solids of shallow ground waters; increases in selenium contents of shallow ground water discharged to streams would also be expected. There are thirteen NPDES permitted waste treatment facilities in the watershed; ten are prohibited from discharging. The four NPDES permitted facilities that do discharge contribute to the selenium load, however, this contribution is very minor compared to the perturbations that have consumed water historically and currently in the basin. All significant sources have been considered.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

The allocation is expressed as a TMDL load duration curve in lbs per day (#/day) of selenium, which is derived from the numeric criterion of 5 ug/L and the flow curve. The allocation is a function of the flow. The load capacity is identified as 0.7884 #/day, 0.1199 #/day and 0.7884 #/day for stations SC011, SC538 and SC548, respectively.

WLA Comment

The WLA is identified as 0.0 #/day, 0.0124 #/day and 0.0041 #/day selenium for stations SC011, SC538 and SC548, respectively. Non-discharging permitted facilities have a WLA of zero.

LA Comment

The LA is identified as 0.7884 #/day, 0.1075 #/day and 0.7843 #/day selenium for stations SC011, SC538 and SC548, respectively.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The MOS is implicit through policies and objectives established under the Kansas Water Plan. Two objectives under the State Water Plan call for, by 2010; 1) reduction of water level decline rates within the Ogallala aquifer and implementation of enhanced water management in targeted areas; and, 2) reduction in the number of irrigation points of diversion for which the amount of water applied in acre-feet per acre exceeds an amount considered reasonable for the area, and those irrigation points of diversion that overpump the amount authorized by their water rights. Pursuit if these two water conservation objectives will have water quality benefits, including assuring excessive irrigation will not directly or indirectly load surface waters with residual salts, thereby causing endpoints to be non-attained.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

Seasonal variation has been incorporated in the TMDL through the TMDL load curve which accounts for all seasonal flow conditions.

Public Participation

Submital describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

Public meetings were held on January 7 and March 3, 2003 in Hays to discuss this particular TMDL and others in the Smoky Hill/Saline basin. An internet web site also housed information for the public to access. A public hearing, held in Hays, was conducted on June 2, 2003 to discuss the basin TMDLs; the Smoky Hill/Saline Basin Advisory Committee met to discuss the TMDLs in the basin on October 3, 2002, and January 7, March 3, and June 2, 2003.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

KDHE will continue to monitor stations 011, 538, 548 and Wilson Lake. Priority status will be evaluated in 2008. Monitoring of selenium levels in effluent will be a condition of NPDES and state permits for facilities.

Reasonable assurance

Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.

Reasonable assurance, although not required for these TMDLs due to the minimal contributions form the point sources, includes numerous authorities and funding through the Kansas Water Plan.